What is claimed is:

1. A cleaning device for collecting toner on a surface of an image bearing body, comprising:

a rotary member having electrical conductivity and being rotatively driven while being in contact with the surface of the image bearing body;

a conductive member which contacts with the image bearing body on an upstream side of the rotary member in a conveyance direction of the image bearing body; and

a single of d.c. power supply to which either one of the rotary member and the conductive member is connected, the other being grounded, and which serves for generating a d.c. current that flows via the image bearing body between the rotary member and the conductive member, whereby a first electric field in such a direction as to exert a force for adsorbing the toner of a normal charging polarity to the rotary member is generated between the rotary member and the image bearing body while a second electric field in a direction reverse to the first electric field is generated between the conductive member and the image bearing body.

2. A cleaning device as claimed in claim 1, wherein the rotary member is connected to the d.c. power supply and the conductive member is grounded.

3. A cleaning device as claimed in claim 1, wherein the conductive member is connected to the d.c. power supply and the rotary member is grounded.

4. A cleaning device as claimed in claim 1, wherein the d.c. power supply is a constant-current d.c. power supply.

5. A cleaning device as claimed in claim 1, wherein the direct current I_C (μA) flowing between the rotary member and the conductive member via the image bearing body, an output voltage V_c (V) of the d.c. power supply, and a distance L_1 (mm) from a contact position of the rotary member with the image bearing body to a contact position of the conductive member with the image bearing body in the conveyance direction of the image bearing body satisfy the following relation:

$$\frac{V_C - 312}{6200} < L_1 < \alpha \cdot \log_e I_c + \beta ,$$

where α and β are factors related to surface resistance of the image bearing body.

6. A cleaning device as claimed in claim 5, wherein the factor α is between or equal to -10.2 and -3.01.

7. A cleaning device as claimed in claim 5, wherein the factor β is between or equal to 31.23 and 39.15.

8. A cleaning device as claimed in claim 1, further comprising a second conductive member which contacts with the image bearing body on an upstream side of the conductive member in the conveyance of the image bearing body and is grounded.

9. A cleaning device as claimed in claim 1, further comprising a third conductive member which contacts with the image bearing body on a downstream side of the rotary member in the conveyance direction of the image bearing body and is connected to the d.c. power supply.

10. An image forming apparatus comprising:

an image bearing body for carrying a toner image on a surface

thereof;

a transfer section for transferring the toner image on the image bearing body surface onto a transfer-destination member by electric power fed from a first power supply;

a current sensor for detecting a current flowing through the transfer section;

a rotary member which is rotatably placed on a downstream side of the transfer section in a conveyance direction of the image bearing body so as to contact with the image bearing body surface and which has electrical conductivity;

a motor for rotating the rotary member;

a second power supply for supplying electric power to the rotary member, whereby toner remaining on the image bearing body surface after transfer is electrostatically adsorbed to the rotary member; and

a controller for controlling at least one of an output of the second power supply and rotational speed of the motor based on a current value detected by the current sensor.

11. An image forming apparatus as claimed in claim 10, wherein the larger the current value detected by the current sensor is, the more the controller increases the output of the second power supply.

12. An image forming apparatus as claimed in claim 10, wherein the larger the current value detected by the current sensor is, the more the controller increases the rotational speed of the motor.

13. A image forming apparatus as claimed in claim 10, further comprising an environment sensor for detecting an environmental condition,

wherein he controller further controls at least one of the output of the first power supply and the rotational speed of the motor based on the environmental condition detected by the environment sensor.

14. An image forming apparatus as claimed in claim 10, further comprising a size sensor for detecting size of the transfer-destination member,

wherein the controller further controls at least one of the output of the first power supply and the rotational speed of the motor based on a size of the transfer-destination member detected by the size sensor.

15. An image forming apparatus comprising:

an image bearing body for carrying a toner image on a surface thereof;

an intermediate transfer member which contacts with the image bearing body;

a primary transfer section for transferring the toner image on the image bearing body surface to the intermediate transfer member by electric power fed from a first power supply;

a secondary transfer section which is placed on a downstream side of the primary transfer section in a conveyance direction of the intermediate transfer member and which serves for transferring the toner image on the intermediate transfer member to a transfer-destination member;

a rotary member which is placed on a downstream side of the secondary transfer section in the conveyance direction of the intermediate transfer member and which is rotatively driven while being in contact with a surface of the intermediate transfer member and which has electrical

conductivity;

a second power supply for supplying electric power to the rotary member, whereby toner remaining on the intermediate transfer member after transfer of the toner image to the transfer-destination member is electrostatically adsorbed to the rotary member;

a conductive member which contacts with the intermediate transfer member and which is electrically connected to the second power supply via the rotary member and the intermediate transfer member and which is grounded;

a current sensor for detecting a current flowing through the conductive member; and

a controller for controlling an output of the first power supply based on a current value detected by the current sensor.

16. An image forming apparatus as claimed in claim 15, wherein the conductive member is placed on an upstream side of the rotary member in the conveyance direction of the intermediate transfer member.

17. An image forming apparatus as claimed in claim 15, wherein the intermediate transfer member is an intermediate transfer belt stretched on a plurality of stretching rollers, and

the conductive member is one of the plurality of stretching rollers which is opposite to the rotary member.

18. An image forming apparatus as claimed in claim 15, wherein the controller adjusts an output voltage of the first power supply so that the current value detected by the current sensor does not exceed a predetermined threshold value.